

## FREE PAPERS – continued

= 0.05). Non-COPD participants volunteered a greater frequency of descriptors classified as 'does not bother me' ( $p < 0.001$ ). In people with COPD, dyspnoea is not simply a more intense physical experience of breathlessness but, like chronic pain, appears to be dominated by affective components.

### **Influence of dyspnoea as classified by the MRC dyspnoea scale in pulmonary rehabilitation and change in 6-minute walk test**

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The Medical Research Council (MRC) dyspnoea scale can be used for assessing disease severity in individuals with chronic obstructive pulmonary disease (COPD) and has been demonstrated to influence response to exercise training. However, different training regimes were utilised depending upon the MRC stratification and therefore it is difficult to isolate the effect of the MRC alone. The aim of this current study is to evaluate the effects of MRC classification on the response to pulmonary rehabilitation as assessed by the 6MWD. All participants underwent the same outpatient based program. A retrospective analysis was performed on 184 individuals with COPD (94 males), aged  $68.6 \pm 9.3$  years, who attended outpatient pulmonary rehabilitation between 2004 and 2006. Participants mean baseline 6MWD as categorised by MRC grade were: mild dyspnoea MRC Grade 1–2 ( $n = 60$ )  $443.0 \text{ m} \pm 107.1 \text{ m}$ ; moderate dyspnoea MRC Grade 3 ( $n = 28$ )  $393.9 \text{ m} \pm 76.2 \text{ m}$ ; severe dyspnoea MRC Grade 4–5 ( $n = 27$ )  $287.1 \text{ m} \pm 105.7 \text{ m}$ . The mean improvements in 6MWD were: mild dyspnoea 12.1% (95% CI  $\pm 14.8\%$   $p < 0.0001$ ); moderate dyspnoea 11.3% (95% CI  $\pm 8.02\%$   $p = 0.0001$ ); severe dyspnoea 16.2% (95% CI  $\pm 8.9\%$   $p = 0.00084$ ). This trend towards greater improvement in 6MWD for the severe dyspnoea group of 16.2%, compared to the mild to moderate groups was not significant ( $p = 0.63$ ). These results demonstrate that all individuals as classified by their baseline MRC dyspnoea scale can potentially improve their 6MWD with pulmonary rehabilitation.

### **Mucociliary clearance in ventilated adult patients: factors which may affect physiotherapy research**

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Mucociliary clearance (MCC) is an important defence system, giving protection for the body against inhaled pathogens with the potential to incite infection. During mechanical ventilation patients often receive therapy with the premise that a deficiency in MCC exists. To effectively administer therapy to individuals receiving mechanical ventilation it is necessary to determine if a deficit in MCC is present. Physiotherapy research into treatment of ventilated patients tends to be inconclusive in determining if physiotherapy decreases complications, length of ventilation time and stay in ICU. By determining the factors which may affect MCC physiotherapy research can be better targeted

to those populations which are shown to have decreased MCC. A literature review was undertaken of Medline and PEDro databases using key terms of mucociliary clearance, artificial airways, ventilated and mucoregulating. The search was limited to articles published within the last twelve years: eighty-seven articles were found which met the search strategy. MCC was found to depend upon cilia beat frequency, mucous rheology and load, and the properties of the periciliary fluid layer. Important factors which affect MCC include medications, temperature, air pressure, osmolarity, age, humidity, pH, high oxygen concentrations, disease state and sleep. When researching the effectiveness of physiotherapy techniques on adult ventilated patients, researchers should document and/or stratify for the factors noted above. This is likely to demonstrate that physiotherapy does decrease ventilator time, pulmonary complication rates and length of stay in ICU.

### **Opinions and attitudes to exercise in chronic obstructive pulmonary disease subjects following involvement in a 12-month maintenance exercise study**

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The aim of this study was to collect information on opinions and attitudes to exercise from chronic obstructive pulmonary disease (COPD) subjects after completion of either a 12-month supervised or unsupervised maintenance exercise program. Following eight weeks of pulmonary rehabilitation, COPD subjects were recruited and randomised into a 12-month maintenance exercise program of either once weekly, supervised, hospital-based exercise (SE) [ $n = 18$ ; mean age (SD) = 65 years (8); mean FEV<sub>1</sub> %pred = 58% (20)] or unsupervised, home exercise (UE) [ $n = 14$ ; mean age = 66 years (8); mean FEV<sub>1</sub> %pred = 67% (17)]. A questionnaire was given to subjects at the completion of their 12-month program. The questionnaire included closed-ended questions with visual analogue scales (100 mm). The questionnaire was designed to determine subjects' opinions on exercise adherence, the importance of exercise, enjoyment of their program and whether subjects thought that maintenance of exercise was beneficial. Information from the questionnaire was collated using mean scores in millimetres (mm) measured from the 100 mm visual analogue scales. The results showed that the SE group exercised more regularly during the 12 months [SE = 63 mm (25); UE = 42 mm (24),  $p = 0.02$ ] and reported more enjoyment at being involved in the study than the UE group [SE = 96 mm (9); UE = 86 mm (16),  $p = 0.02$ ]. Both groups reported that exercise was important [SE = 97 mm (5); UE = 92 mm (14),  $p = 0.2$ ] and that their 12-month program was beneficial in improving some aspect of their life [SE = 89 mm (11); UE = 80 mm (25),  $p = 0.1$ ]. In conclusion these data show that COPD subjects have positive attitudes towards both supervised and unsupervised maintenance exercise programs. However, exercise adherence may be better maintained with supervision.